CLAIMS

1. (Cancelled).

2. (Currently amended) A spectral acquisition system, comprising:

an exploration subsystem operative to repeatedly expose different interior portions of a three-dimensional sample while the sample remains in a same position, wherein the exploration subsystem includes a cutting implement and a guide, ~~and~~

a spectral acquisition subsystem operative to acquire images of each of the interior portions exposed by the exploration subsystem, while the sample remains in the same position, wherein the exploration subsystem is operative in the field of view of the spectral acquisition system, and

a control module operative to control the exploration subsystem, and

an analysis module for assembling the acquired spectral images into a three-dimensional data representation that includes spectral information for positions in three spatial dimensions.

3. (Previously presented) The apparatus of claim 2 wherein the exploration subsystem includes an actuator operative to advance the cutting implement.

4. (Cancelled).

5. (Previously presented) The apparatus of claim 2 further including a mechanical link, an electrical link, and a digital link between the exploration subsystem and the spectral acquisition system.

6. (Cancelled).

7. (Previously presented) The apparatus of claim 2 wherein the spectral acquisition system includes a two-dimensional array detector and a spectrally selective device.

8. (Previously presented) The apparatus of claim 2 wherein the spectral acquisition subsystem operates in near-infrared or mid-infrared spectral regions.

9. (Previously presented) The apparatus of claim 2 further including an airborne waste collection system having an inlet proximate the exploration subsystem.

10. (Previously presented) The apparatus of claim 2 wherein the exploration subsystem includes a sample embedding substance.

11. (Cancelled).

12. (Previously presented) The method of claim 23 wherein the steps of actively processing and acquiring are applied to a friable material and further including the step of preparing the friable material to withstand the step of actively processing before the step of actively processing.

13. (Previously presented) The method of claim 16 wherein the steps of preparing, actively processing, and acquiring are applied to a bulk pharmaceutical material.

14. (Previously presented) The method of claim 16 wherein the steps of preparing, actively processing, and acquiring are applied to a pharmaceutical dosage unit.

15. (Previously presented) The method of claim 16 wherein the steps of preparing, actively processing, and acquiring are applied to a pharmaceutical tablet including at least one active ingredient and one inert ingredient.

16. (Currently amended) A spectral acquisition method, comprising:

repeatedly actively processing a sample to expose characteristics of interior portions of the sample~~,~~ in a series of steps of processing while the sample remains in a same position,

acquiring spectral information from the interior portions of the sample exposed in ~~the step of exposing~~each of the steps of processing while the sample remains in the same position, wherein the steps of actively processing and acquiring are applied to a friable material,~~ and~~

preparing the friable material to withstand the step of actively processing before the step of actively processing, wherein the step of preparing includes fixing the sample in a fixing material and the step of actively processing includes cutting the sample~~.~~, and

assembling the acquired spectral information into a three-dimensional data representation that includes spectral information for positions in three spatial dimensions.

17. (Cancelled).

18. (Currently amended) The method of claim ~~17~~16 further including a step of selecting a spatial separation between the steps of actively processing to be on the same order as that of a spatial resolution of the step of acquiring.

19. (Currently amended) The method of claim ~~17~~16 further including a step of interpolating data received from the steps of acquiring to adjust for a spatial separation between the steps of actively processing.

20. (Previously presented) The method of claim 16 wherein the steps of actively processing expose planar interior surfaces.

21. (Cancelled).

22. (Previously presented) The method of claim 16 wherein the step of actively processing and the step of acquiring both take place as part of an automated sequence.

23. (Currently amended) A spectral acquisition method, comprising:

actively processing a sample to expose characteristics of interior portions of the sample~~,~~ while the sample remains at a same position in a series of steps of actively processing,

acquiring spectral information from the interior portions of the sample exposed in the ~~step of exposing~~steps of actively processing while the sample remains at the same position, and

processing the spectral information acquired in the step of acquiring to obtain two-dimensional chemical image planes and reconstructing at least one three-dimensional image from the two dimensional chemical image planes.

24. (Previously presented) The method of claim 23 wherein the step of acquiring operates in near-infrared or mid-infrared spectral regions.

25. (Cancelled).

26. (Previously presented) The apparatus of claim 28 wherein the means for holding include means for embedding the pharmaceutical tablet.

27. (Previously presented) The apparatus of claim 28 wherein the means for holding include a holding wax.

28. (Currently amended) A spectral acquisition system, comprising:

means for holding a friable pharmaceutical tablet,

means for repeatedly exposing interior portions of the friable pharmaceutical tablet while the friable pharmaceutical tablet remains in a same position, wherein the means for exposing includes a cutting implement and a guide, ~~and~~

means for repeatedly obtaining spectral images of the exposed interior portions~~;~~ while the friable pharmaceutical tablet remains in the same position, wherein the means for repeatedly obtaining is operative to obtain a set of images of the exposed interior portions of the tablet, and

means for assembling the obtained spectral images into a three-dimensional data representation that includes spectral information for positions in three spatial dimensions.

29. (Previously presented) The apparatus of claim 28 wherein the means for exposing includes means for advancing the cutting implement.

30. (Previously presented) The apparatus of claim 28 wherein the means for holding are operative to hold the pharmaceutical tablet in a field of view of the means for obtaining spectral images during operation of the means for exposing.

31. (Previously presented) The apparatus of claim 28 further including a mechanical link, an electrical link, and a digital link between the means for exposing and the means for obtaining spectral images.

32. (Previously presented) The apparatus of claim 28 further including means for controlling the means for exposing and for processing information from the means for obtaining spectral images.

33. (Previously presented) The apparatus of claim 28 wherein the means for obtaining spectral images operate in near-infrared or mid-infrared spectral regions.

34. (Previously presented) The apparatus of claim 28 further including means for collecting airborne waste from the means for exposing.

35. (Currently amended) A spectral acquisition method comprising,

positioning a pharmaceutical tablet at a first position within an optical field of view of an acquisition system,

removing material from the tablet while the tablet remains at the first position within the field of view, ~~and~~

acquiring ~~an~~a first spectral image of the tablet by the acquisition system after the step of removing~~.~~, while the tablet remains at the first position within the field of view,

removing further material from the tablet while the tablet remains at the first position within the field of view in one or more further steps of removing,

acquiring a further spectral image of the tablet by the acquisition system after each further step of removing, while the tablet remains at the first position within the field of view, and

assembling the acquired spectral images into a three-dimensional data representation that includes spectral information for positions in three spatial dimensions.

36. (Previously presented) The method of claim 35 wherein the steps of removing and acquiring are applied to a friable tablet and further including the step of preparing the friable tablet to withstand the step of removing.

37. (Previously presented) The method of claim 36 wherein the steps of preparing, removing, and acquiring are applied to a pharmaceutical tablet including at least one active ingredient and one inert ingredient.

38. (Previously presented) The method of claim 36 wherein the step of preparing includes fixing the sample in a fixing material and the step of removing includes cutting the sample.

39. (Previously presented) The method of claim 36 wherein the step of preparing includes fixing the sample in a fixing material and the step of removing includes cutting the sample with a blade.

40. (Previously presented) The method of claim 36 wherein the step of preparing includes fixing the sample in a fixing material and the step of removing includes cutting the sample with a rotating blade.

41. (Cancelled).

42. (Currently amended) The method of claim ~~41~~35 further including a step of selecting a spatial separation between the steps of removing to be on the same order as that of a spatial resolution of the step of acquiring.

43. (Currently amended) The method of claim ~~41~~35 further including a step of interpolating data received from the steps of acquiring to adjust for a spatial separation between the steps of removing.

44. (Previously presented) The method of claim 35 wherein the step of removing and the step of acquiring both take place with the sample in a position constrained in at least one dimension.

45. (Previously presented) The method of claim 35 wherein the step of removing and the step of acquiring both take place as part of an automated sequence.

46. (Cancelled).

47. (Previously presented) The method of claim 35 further including the step of obtaining the tablet as a sample of a tablet making process and wherein the steps of obtaining, removing, and acquiring take place as part of a quality control process for the tablet making process that includes further steps of obtaining, removing, and acquiring.

48. (Previously presented) The method of claim 35 further including the step of obtaining the tablet from a formulation-phase experiment.

49. (Previously presented) The method of claim 35 wherein the steps of removing and acquiring take place as part of a root-cause analysis process.

50. (Previously presented) The method of claim 35 wherein the step of acquiring an image acquires an image in near-infrared or mid-infrared spectral regions.

51. (Previously presented) The method of claim 35 wherein the step of acquiring is operative to obtain an image reflected from a surface of the tablet exposed by the step of removing.

52. (Cancelled).

53. (Previously presented) The method of claim 16 wherein the step of acquiring operates in near-infrared or mid-infrared spectral regions.